

CLAIMS

1. A sputtering target with few surface defects having a target surface in which intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility exist in a highly ductile matrix phase at a volume ratio of 1 to 50%, wherein defects of $10 \mu\text{m}$ or more resulting from machine work do not exist.
2. A sputtering target according to claim 1, wherein intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility exist in a highly ductile matrix phase at a size in which the average particle diameter is at least 0.5 to $50 \mu\text{m}$.
3. A sputtering target according to claim 1 or claim 2, wherein the Vickers hardness of the highly ductile matrix phase is 400 or less, the Vickers hardness of the intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility is 400 or more, and the hardness difference thereof is at least 1.5 times.
4. A surface processing method of a sputtering target with few surface defects, wherein a target surface in which intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility exist in a highly ductile matrix phase at a volume ratio of 1 to 50% is preliminarily subject to the primary processing of cutting work, then subsequently subject to finish processing via polishing.
5. A surface processing method of a sputtering target according to claim 4, wherein the primary processing of cutting work is performed to cut an area of 1mm to 10mm from the surface of the target material.
6. A surface processing method of a sputtering target according to claim 4 or claim 5, wherein the finish processing via polishing is performed to polish an area of $1 \mu\text{m}$ to $50 \mu\text{m}$ from the surface after being subject to the primary processing of cutting work.
7. A surface processing method of a sputtering target according to any one of claims 4 to 6, wherein polishing is performed with sandpaper or a grindstone having a

rough abrasive grain size of #80 to #400.

8. A surface processing method of a sputtering target according to any one of claims 4 to 7, wherein cutting is performed with lathe processing employing a bite (a cutting tool) or a chip.

5 9. A surface processing method of a sputtering target according to any one of claims 4 to 8, wherein intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility exist in a highly ductile matrix phase at a size in which the average particle diameter is at least 0.5 to 50 μ m.

10. A surface processing method of a sputtering target according to any one of claims 4 to 9, wherein the Vickers hardness of the highly ductile matrix phase is 400 or less, the Vickers hardness of the intermetallic compounds, oxides, carbides, carbonitrides and other substances without ductility is 400 or more, and the hardness difference thereof is at least 1.5 times.